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INSTALLATION RESTORATION OIL WATER SEPARATOR ASSESSMENT SAMPLING AND ANALYSIS PLAN ADDENDUM NAS FORT WORTH TX

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NAVAL AIR STATION FORT WORTH JRB CARSWELL FIELD TEXAS

ADMINISTRATIVE RECORD COVER SHEET

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11-3517-0121.05

INSTALLATION RESTORATION PROGRAM (IRP)
OIL/WATER SEPARATOR ASSESSMENT

SAMPLING AND ANALYSIS PLAN ADDENDUM

Carswell Air Force Base, Fort Worth, Texas

April 1994

Final

PREPARED FOR

AIR FORCE BASE CONVERSION AGENCY (AFBCA/OL-H)
CARSWELL AIR FORCE BASE, TEXAS 76127

UNITED STATES AIR FORCE
AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE
BASE CLOSURE RESTORATION DIVISION (AFCEE/ERB)
BROOKS AIR FORCE BASE, TEXAS 78235-5328

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

220012

April 15, 1994

Air Force Center for Environmental Excellence
HQ AFCEE/ESB
8001 Inner Circle Drive, Suite 2
Brooks Air Force Base, TX 78235-5328

Attention: Mr. Chris Hobbins (Team Chief)

Subject: **Carswell Air Force Base**
Oil/Water Separator Assessment
Final Sampling and Analysis Plan Addendum
Contract No. F33615-90-D-4008
Delivery Order No. 0021
Law Project No. 11-3517-0121

Dear Mr. Hobbins:

Law Environmental, Inc., Government Services Division is pleased to submit the enclosed eight (8) copies of the Oil/Water Separator Assessment Final Sampling and Analysis Plan Addendum to the Air Force Center for Environmental Excellence (AFCEE) for approval.

If you have questions or comments, please contact us at (404) 499-6800.

Sincerely,

LAW ENVIRONMENTAL, INC.

John F. O'Brien
Project Manager

E. Fred Sharpe, Jr., P.E.
Principal

JFO/EFS:dcl

3517-0121.08

LAW ENVIRONMENTAL, INC.
GOVERNMENT SERVICES DIVISION
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ONE OF THE LAW COMPANIES

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LAW ENVIRONMENTAL INC., (LAW), WILL CONDUCT AN OIL/WATER SEPARATOR ASSESSMENT AT 11 SITES AT CARSWELL AIR FORCE BASE (CAFB), TEXAS, UNDER THE AIR FORCE INSTALLATION RESTORATION PROGRAM (IRP). THE PROJECT FOLLOWS THE REQUIREMENTS OF IRP, AND THE WORK DESCRIBED IN THIS SAMPLING AND ANALYSIS PLAN (SAP) IS DESIGNED TO ASSESS THE PRESENCE AND OR ABSENCE OF CONTAMINANTS.

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220014

INSTALLATION RESTORATION PROGRAM (IRP)

OIL/WATER SEPARATOR ASSESSMENT

FINAL SAMPLING AND ANALYSIS PLAN ADDENDUM

FOR

CARSWELL AFB

FORT WORTH, TEXAS 76127-5000

APRIL 1994

Prepared by:

Law Environmental, Inc.

114 TownPark Drive

Kennesaw, Georgia 30144

CONTRACTOR CONTRACT NO. F33615-90-D-4008 DELIVERY ORDER NO. 0021

United States Air Force
Air Force Center for Environmental Excellence
Base Closure Restoration Division (HQ AFCEE/ERB)
Brooks Air Force Base, Texas 78235-5328
Mr. Chris Hobbins (Team Chief)

SAMPLING AND ANALYSIS PLAN (SAP) ADDENDUM
DISCLAIMER NOTICE

This Sampling and Analysis Plan Addendum has been prepared for the United States Air Force by Law Environmental, Inc. for the purpose of aiding in the implementation of a final remedial action plan under the Air Force Installation Restoration Program (IRP). As the report relates to actual or possible releases of potentially hazardous substances, its release prior to an Air Force final decision on remedial action may be in the public's interest. The limited objectives of this plan and the ongoing nature of the IRP, along with the evolving knowledge of site conditions and chemical effects on the environment and health, must be considered when evaluating this report, since subsequent facts may become known which may make this plan premature or inaccurate. Acceptance of this sampling and analysis work plan addendum in performance of the contract under which it is prepared does not mean that the Air Force adopts the conclusions, recommendations or other views expressed herein, which are those of the contractor only and do not necessarily reflect the official position of the United States Air Force.

Copies of this plan may be purchased from:

Government agencies and their contractors registered with the Defense Technical Information Center (DTIC) should direct their requests for copies of this work plan to:

Defense Technical Information Center
Cameron Station
Alexandria, VA 22304-6145

Non-government agencies may purchase copies of this document from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161

PURPOSE OF DOCUMENT

This Sampling and Analysis Plan (SAP) Addendum has been developed for the assessment of eleven oil/water separators as identified within Delivery Order 0021. Procedures outlined in this plan are designed to describe the collection of geologic data, hydrologic data, environmental samples, laboratory analysis of those samples for potential contaminants, evaluation of the analytical results and field measurements, with respect to quality control data and the interpretation and analysis of QA/QC reviewed data. The plan will be effective after final approval by the Air Force Center for Environmental Excellence (AFCEE).

The success of Carswell AFB's Installation Restoration Program depends on team effort and total dedication from parties involved. Therefore, efforts will be focused on achieving and maintaining compliance with this Sampling and Analysis Plan Addendum and pertinent regulations.

The point of contact for this investigation is as follows:

Mr. Chris Hobbins
Team Chief
HQ AFCEE/ERB
8001 Inner Circle Drive, Suite 2
Brooks AFB, Texas 78235-5328
Phone: (210) 536-5261

PREFACE

Law Environmental, Inc. (Law) was contracted by the U.S. Air Force Center for Environmental Excellence (AFCEE) to perform an oil/water separator assessment at eleven sites at Carswell AFB, Texas. The eleven sites to be investigated are associated with the following buildings:

1. Unnamed Stream (Building 38A)
2. Truck Re-Fuel Station (Building 1064)
3. Machine Shop (Building 1060)
4. Aircraft Wash Rack (Building 1027)
5. Engine Test Cell (Building 1015)
6. Bomb Assembly (Building 4210)
7. Generator Maintenance (Building 1414)
8. Auto Hobby Shop (Building 1145)
9. Hazardous Waste Storage Area (Building 1190)
10. Vehicle Maintenance Shop (Building 1191)
11. Fuel Truck Repair (Building 1194)

The primary objectives of this field investigation are to:

1. Assess the presence or absence of contamination and assess the types and quantities of detected contamination;

2. Evaluate the operational status of each oil/water separator under study and recommend any repair and/or replacement needs; and

3. Provide a written report discussing the evaluation and recommended future use of each oil/water separator under study by this delivery order.

Project objectives will be achieved through the use of soil borings and hand auger borings; in combination with the collection of soil samples for field screening and laboratory analyses.

The SAP Addenda outlines the field activities, collection, and laboratory analytical procedures required for the oil/water separator assessment at Carswell AFB.

The SAP Addenda is composed of two documents - the Quality Assurance Project Plan (QAPP) Addenda and the Field Sampling Plan (FSP) Addenda.

The QAPP Addenda consists of detailed information on defining and assuring that the Data Quality Objectives (DQOs) are achieved. DQOs are considered through various project tasks, including writing of plans, field work, and laboratory analysis. The QAPP delineates the procedures necessary to achieve DQO goals.

The FSP Addenda describes field tasks necessary for implementing the project objectives. Field tasks are described in detail to ensure that the DQOs are achieved during field activities.

Mr. John O'Brien is the Project Manager for the oil/water separator assessment. Members of the field investigation team will be selected prior to commencement of field activities.

The SAP Addendum was prepared by Mr. Tom McComb and reviewed by Mr. Jerry Preston and Mr. Fred Sharpe.

The effort of Mr. Chris Hobbins (AFCEE Team Chief) and personnel at Carswell AFB are greatly appreciated.

John F. O'Brien
Project Manager

E. Fred Sharpe Jr., P.E.
Principal

Louis S. Karably, P.E.
Program Manager

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1.0 QUALITY ASSURANCE PROJECT PLAN

1.1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) Addendum is provided in support of the United Stated Air Force (USAF) Installation Restoration Program (IRP) for assessment activities for eleven oil/water separators located at Carswell Air Force Base (Carswell AFB), Fort Worth, Texas. This is an addendum for the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental. The final sampling and analysis plan was prepared by Law Environmental under Contractor Contract No. F33615-90-D-4008, Delivery Order 0011.

1.1.1 The U.S. Air Force Installation Restoration Program

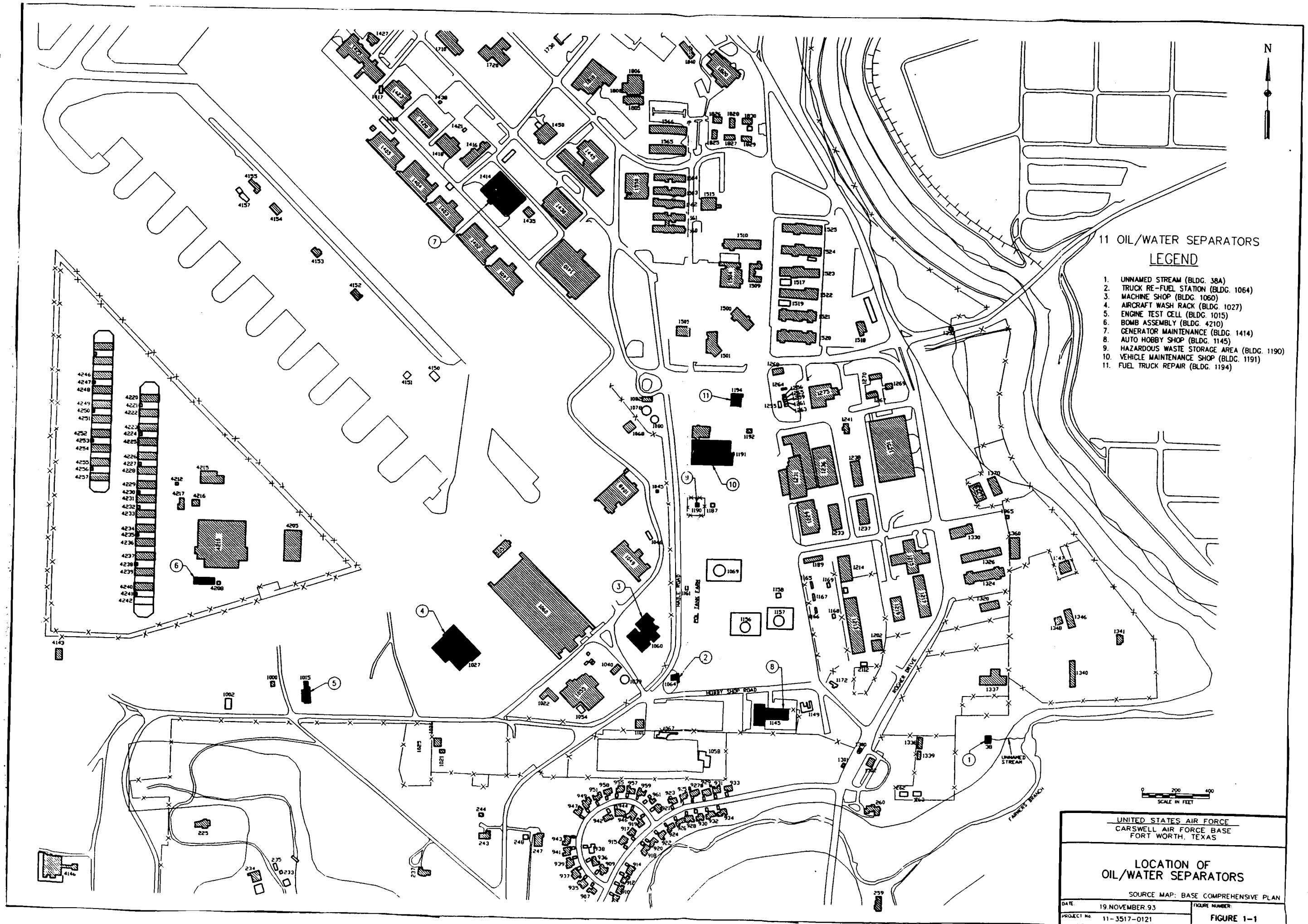
Refer to Section 1.1.1 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.2 PROJECT DESCRIPTION

This section describes the project with respect to objectives, scoping documents, and the role of subcontractors.

1.2.1 Project Background

Carswell AFB has identified eleven oil/water separators located throughout the facility (Figure 1-1) that have been associated with heavy usage and will require assessment to aide in evaluating the future use of these oil/water separators.


11 OIL/WATER SEPARATORS
LEGEND
1. UNNAMED STREAM (BLDG. 38A)
2. TRUCK RE-FUEL STATION (BLDG. 1064)
3. MACHINE SHOP (BLDG. 1060)
4. AIRCRAFT WASH RACK (BLDG. 1027)
5. ENGINE TEST CELL (BLDG. 1015)
6. BOMB ASSEMBLY (BLDG. 4210)
7. GENERATOR MAINTENANCE (BLDG. 1414)
8. AUTO HOBBY SHOP (BLDG. 1145)
9. HAZARDOUS WASTE STORAGE AREA (BLDG. 1190)
10. VEHICLE MAINTENANCE SHOP (BLDG. 1191)
11. FUEL TRUCK REPAIR (BLDG. 1194)
N
HOBBY SHOP ROAD
HALE ROAD
POL TANK FARM
ROGER DRIVE
UNNAMED STREAM
FARMERS BRANCH
0 200 400
SCALE IN FEET
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS
LOCATION OF
OIL/WATER SEPARATORS
SOURCE MAP: BASE COMPREHENSIVE PLAN
DATE 19.NOVEMBER.93
PROJECT No. 11-3517-0121
FIGURE NUMBER:
FIGURE 1-1

1.2.2 Project Scope and Objectives

The objectives of this oil/water separator assessment are to:

1. Assess the presence or absence of contamination and assess the types and quantities of detected contamination;

2. Evaluate the operational status of each oil/water separator under study and recommend any repair and/or replacement needs; and

3. Provide a written report discussing the evaluation and recommended future use of each oil/water separator under study by this delivery order.

Assessment of each oil/water separator's operational status will be based on review of available information obtained during previous site visits conducted by Law Environmental. Information covering the operation of each separator unit was obtained from Carswell AFB maintenance files and from interviews with cognizant facility maintenance personnel. Evaluation of the oil/water separators will be based on visual observations and review of available information. Capacity studies and studies designed to verify effluent points are beyond the scope of this assessment.

1.2.3 Subcontractors

Law will manage the project and provide services related to field sampling, data analysis, site characterization, and reporting. At this stage of the investigation the following subcontractors have been identified.

ATEC Environmental Services of Dallas, Texas, will be the subcontractor to perform the drilling services.

Law Environmental National Laboratories of Pensacola (LENL) is the Law Environmental, Inc. production chemical testing laboratory. LENL will provide sample shipping containers, chain of custody documentation, chemical analysis and reporting, and laboratory quality assurance/quality control (QA/QC). LENL has integrated QA/QC Procedures into their laboratory design and standard operating procedures. LENL has been approved for USAF analytical work by the MITRE Corporation.

Details of the project organization, personnel, and subcontractor responsibility are provided in the Sampling and Analysis Plan (SAP) Addendum for this project.

1.3 PROJECT ORGANIZATION AND RESPONSIBILITIES

Refer to Section 1.3 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.4 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

Refer to Section 1.4 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.5 SAMPLING PROCEDURES

Refer to Section 1.5 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.6 SAMPLE CUSTODY

Refer to Section 1.6 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.7 FIELD EQUIPMENT CALIBRATION PROCEDURES

Refer to Section 1.7 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.8 ANALYTICAL PROCEDURES

The following sections identify the analytical methods to be utilized.

1.8.1 Identification of Methods

The analytical methods to be utilized for the soil samples are presented in Table 1-1. Based on chemical analysis of soil samples, a back calculation will be performed to determine if Toxicity Characteristic Leaching Procedure (TCLP) regulatory limit would be exceeded. If the back calculated concentration of a given parameter exceeds the TCLP limit, TCLP will be performed for that parameter. An alternative approach to the actual extraction process of the TCLP laboratory procedure which may be a cost-saving shortcut is to evaluate the concentration of the contaminant in the soil and mathematically determine if it will satisfy the leachate criteria. The TCLP laboratory procedure requires the soil sample to be diluted by a ratio of 20:1 when preparing the sample for the

TABLE 1-1

SAMPLING AND ANALYSIS PLAN SUMMARY: SUB-SURFACE SOIL FROM BORINGS NEAR OIL/WATER SEPARATORS
RCRA FACILITY INVESTIGATION – CARSWELL AIR FORCE BASE, TEXAS

PARAMETER	TOTAL NO. FIELD LOCATION	SAMPLES PER LOCATION	FIELD DUPLICATE	EQUIPMENT BLANK(a)	AMB COND BLANK(b)	TRIP BLANK(c)	TOTAL NO. FIELD SAMPLES	MS	MSD	LAB DUPLICATE	SPIKED BLANK(d)	2ND (e) COLUMN CONFIRM. ANALYSES	TOTAL NO. LAB SAMPLES
Oil/Water Separators													
ICP Screen for Metals SW 3050/SW 6010	44	2	9	10	0	0	107	6	6	0	6	0	125
Oil/Water Separators													
Volatile Organic Compounds SW 8240	44	2	9	10	10	10	127	7	7	0	7	0	148
Containerized Waste Material													
TCLP SW1311	11	1	0	0	0	0	11	0	0	0	0	0	11

(a) Estimated; number to be determined by number of days to drill and sample 11 oil/water separators.
(b) Estimated; number to be determined by site activities on the day of sampling. Ambient conditions blanks shall be collected when samples are collected downwind of possible volatile organic sources such as active runways or engine test cells. If such conditions warrant that an ambient conditions blank be taken, it will be analyzed for volatile organics only.
(c) Volatile organics only; number to be initiated will depend upon number of shipments.
(d) Estimated; number to be determined by batch preparation.
(e) Method SW8240 will have 2nd column confirmation performed on all samples exhibiting positive results.

PREPARED BY/DATE: 14APR94
CHECKED BY/DATE: 15APR94
APPROVED BY/DATE: 15APR94

acidic extraction, and subsequent leachate analysis. Assuming that the entire mass of the contaminants present in the soil will leach out during the extraction process, the dilution factor of 20 can be applied to the actual soil concentration obtainable in the leachate.

If a contaminant concentration in the soil is known, then the maximum possible contaminant concentration in the TCLP extract can be determined by the following equation:

Contaminant Concentration in Soil (μg/kg or ppb)	÷ 20 =	Maximum Possible Contaminant Concentration in Extract Liquid (μg/L or ppb)

If the maximum possible contaminant concentration in the extract liquid, as determined by the above equation, is less than or equal to the contaminant's TCLP Extraction Guidance Value, then the contaminant satisfies the ground water quality protection must be confirmed by actually performing the TCLP extraction for that contaminant (Spill Technology and Remediation Services, New York Department of Environmental Conservation, August 1992).

1.8.2 Detection and Quantitation Criteria

Refer to Section 1.8.2 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.8.3 Method Calibration

Refer to Section 1.8.3 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.9 DATA REDUCTION, VALIDATION, AND REPORTING

Refer to Section 1.9 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.10 INTERNAL QUALITY CONTROL CHECKS

Refer to Section 1.10 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

The types and numbers of laboratory quality control samples to be used are presented in Table 1-1 by matrix and parameter.

1.11 PERFORMANCE AND SYSTEM AUDITS

Refer to Section 1.11 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.12 PREVENTIVE MAINTENANCE

Refer to Section 1.12 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.13 FIELD AND LABORATORY PROCEDURES USED TO ASSESS DATA QUALITY INDICATORS

Refer to Section 1.13 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.14 CORRECTIVE ACTION

Refer to Section 1.14 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

1.15 QUALITY ASSURANCE REPORTS

Refer to Section 1.15 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

2.0 FIELD SAMPLING PLAN

The field tasks for this addendum to be conducted at Carswell AFB sites are explained in detail in the following text.

2.1 FIELD OPERATIONS

This section of the Field Sampling Plan for Carswell AFB describes the field operations which will be conducted as part of this assessment. Activities will include the following:

- Site Reconnaissance and Preparation
- Soil Borings and Soil Sampling
- Surveying
- Equipment Decontamination
- Waste Handling

In the following sections the methods and procedures to be adopted for each of the activities are described.

2.1.1 Site Reconnaissance, Preparation, and Restoration

The locations of the oil/water separators were observed during two site visits, June 30 and October 1, 1993 by representatives of Law Environmental, AFCEE, and Carswell AFB. During the site visit Carswell AFB representatives outlined the conditions found at each oil/water separator. Also during the site visit, Law noted likely soil boring locations and potential access problems.

Prior to commencement of operations at each of the sites, the Law Site Manager will conduct additional site reconnaissance to determine requirements for site preparation and clearance. Site preparation will include clearance of brush and other obstructions.

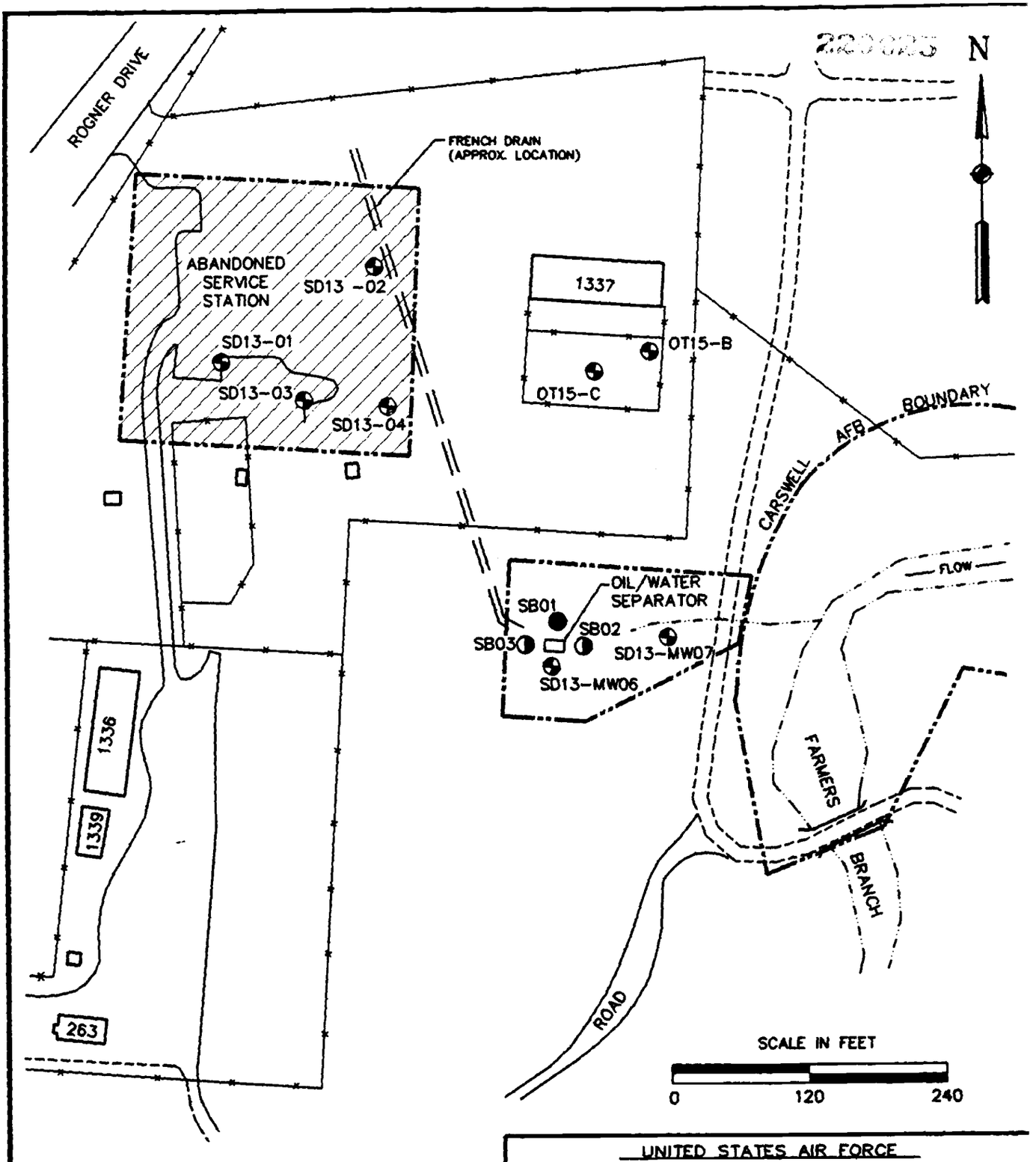
After utilities are located and required site preparation is complete, proposed drilling and sampling locations (Figures 2-1 to 2-11) will be clearly staked and marked. Clearance for utilities at drilling locations will then be conducted by liaison with base operations and maintenance staff and/or civilian utility operators where appropriate. Drilling locations will, if necessary, be relocated to avoid utilities. The new locations will be chosen in order to achieve the same objectives as were intended for the original location. No intrusive activities will be conducted until clearance for utilities has been completed.

The Law Site Manager will also discuss the locations of the decontamination area, emergency equipment and a drum staging area prior to commencement of operations, with the relevant personnel on base.

Following the completion of drilling and sampling at each location, the Law Site Manager will visit the location and will verify that the site has been cleared and restored as closely as possible to the same condition as it was prior to the commencement of operations.

2.1.2 Soil Boring and Soil Sampling

Each soil boring will be drilled from the ground surface to the saturated zone or to auger refusal via hollow stem auger or hand auger techniques to allow the collection of sub-surface soil samples and to provide subsurface information on the site stratigraphy. Prior to advancing soil borings, the depth of each oil/water separator will be measured. Soil borings will be terminated either at the saturated zone or at a depth 2 feet below the oil/water separator, which ever is shallower. Drill rig access is available at most proposed soil boring locations, however some concrete coring and hand augering will be required due to access



LEGEND

- ● PROPOSED HAND AUGER BORING LOCATION
- ◑ PROPOSED SOIL BORING LOCATION
- ◕ MONITORING WELL LOCATION
- —x— FENCE

UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 38A

PREPARED BY/DATE:	FIGURE NUMBER: 2-1	FILE DATE: 20.JANUARY.94
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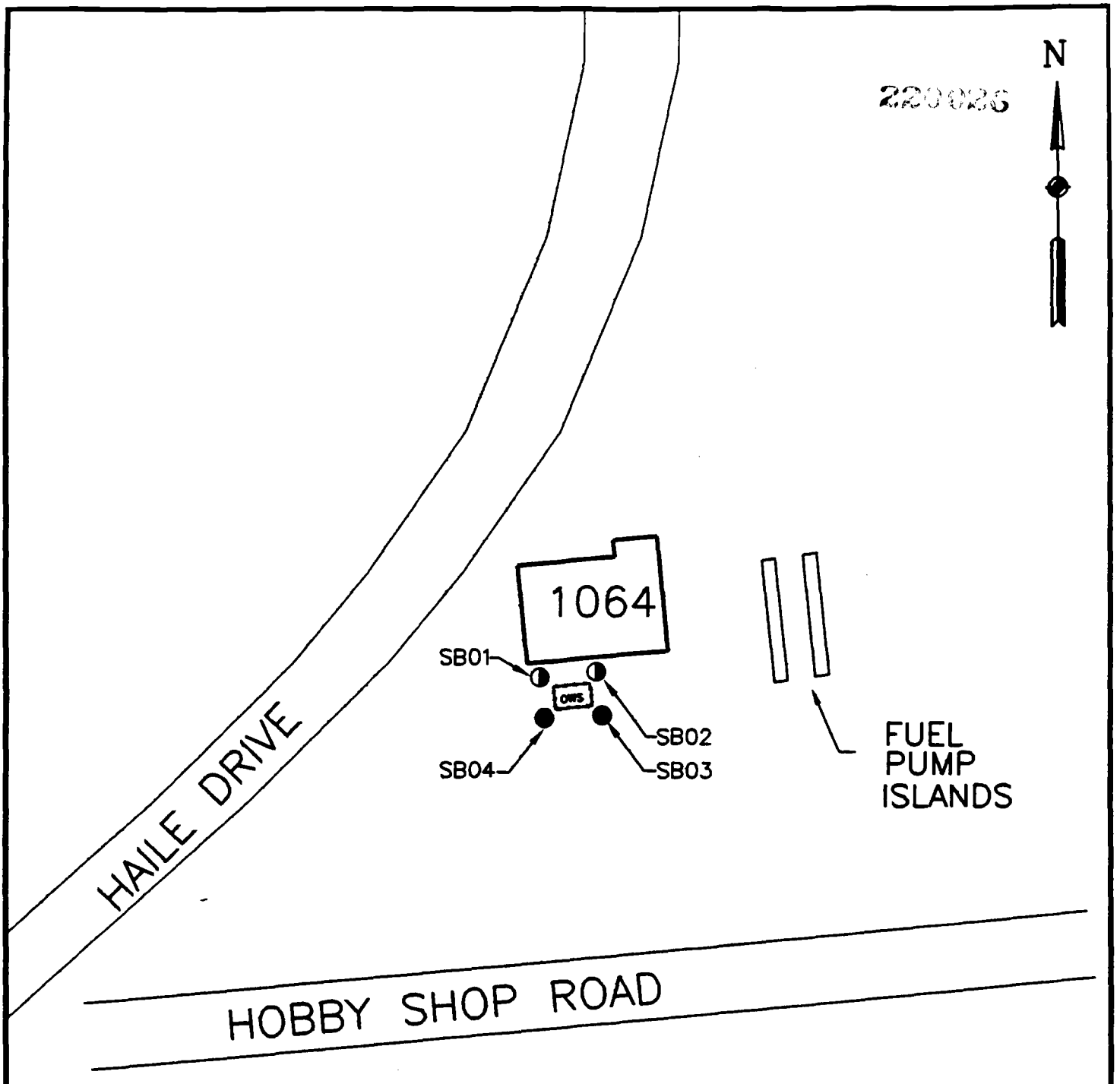
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG38A



LEGEND:

OWS OIL/WATER SEPARATOR

◑ PROPOSED SOIL BORING LOCATIONS

● PROPOSED HAND AUGER BORING LOCATION

SCALE: NTS

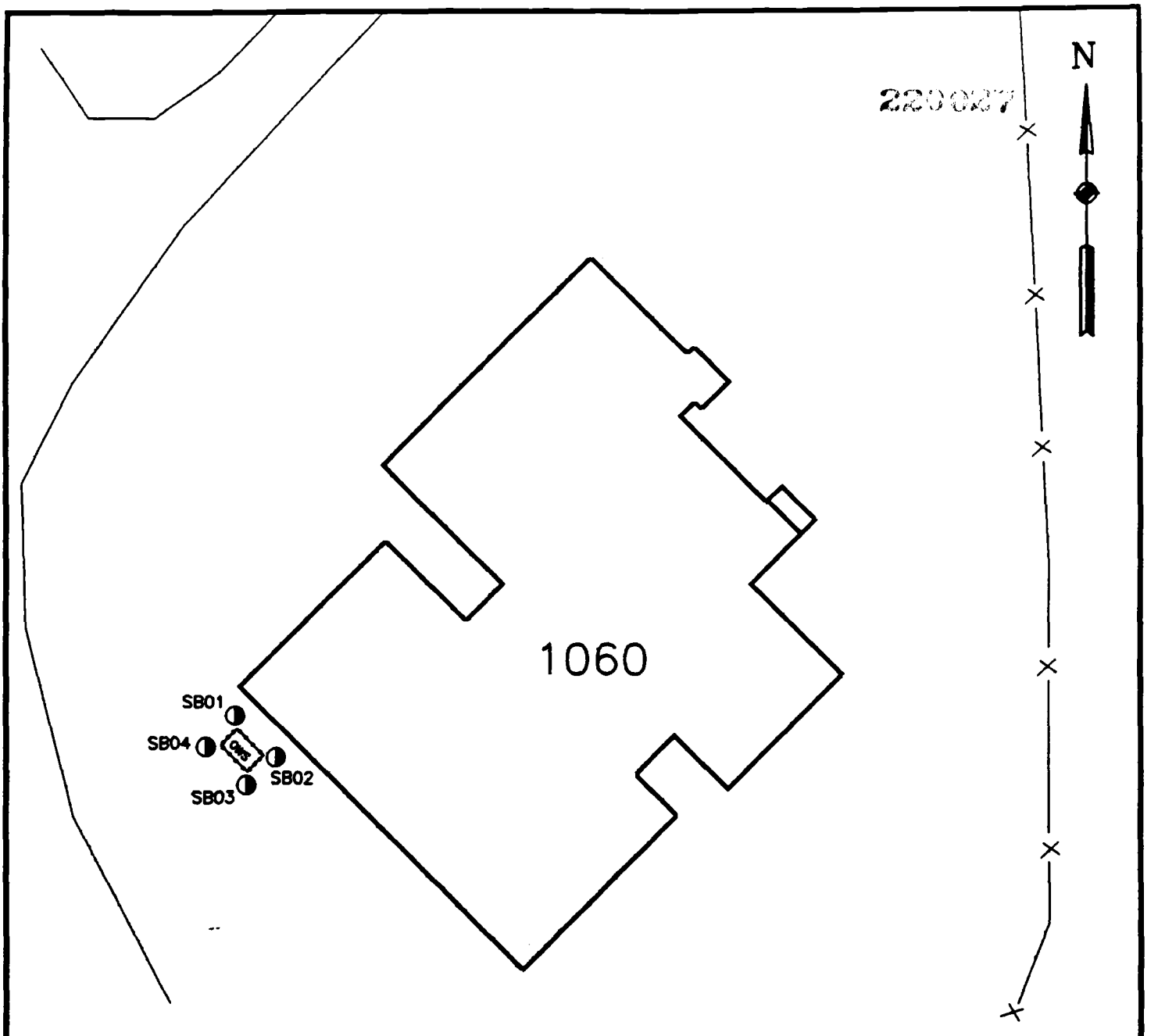
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1064

PREPARED BY/DATE:	FIGURE NUMBER: 2-2	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 13 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1064



LEGEND:

OWS OIL/WATER SEPARATOR

PROPOSED SOIL BORING LOCATIONS

UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1060

PREPARED BY/DATE:	FIGURE NUMBER: 2-3	FILE DATE: 20.JANUARY.94
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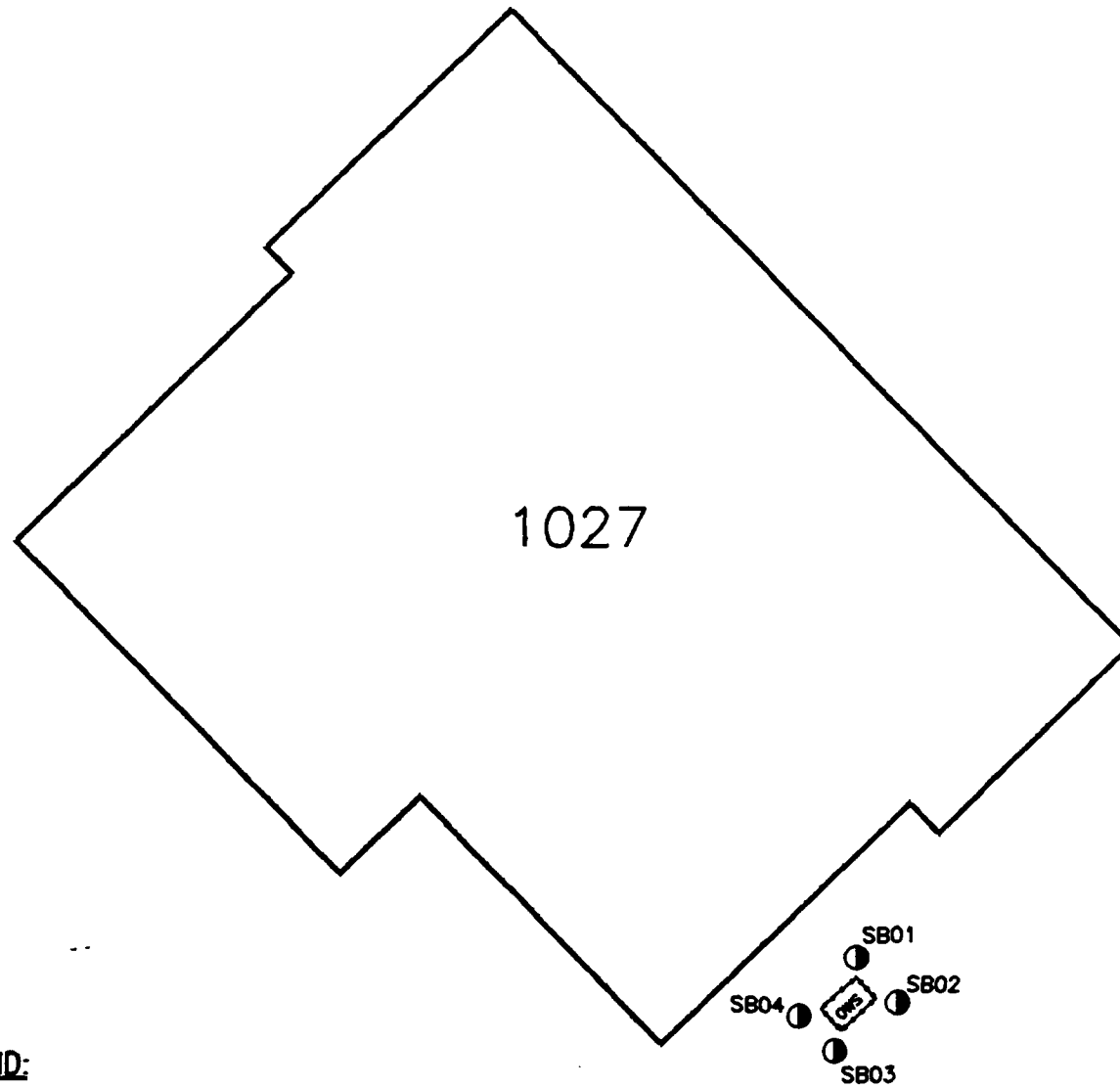
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1060



LEGEND:

OWS OIL/WATER SEPARATOR

◑ PROPOSED SOIL BORING LOCATIONS

0 50 100

SCALE IN FEET

UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1027

PREPARED BY/DATE:	FIGURE NUMBER: 2-4	FILE DATE: 20.JANUARY.94
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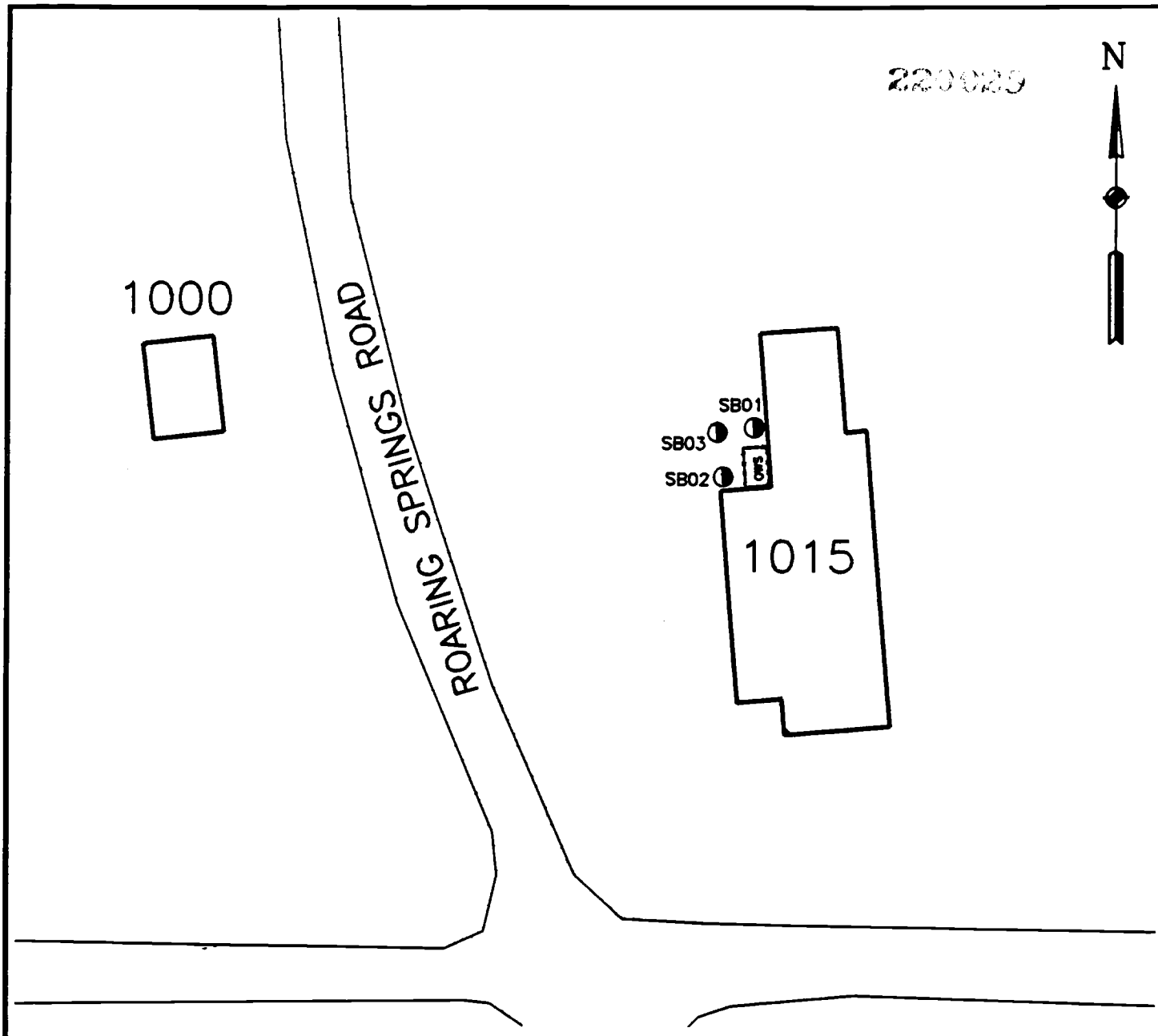
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1027



LEGEND:

OWS OIL/WATER SEPARATOR

◑ PROPOSED SOIL BORING LOCATIONS

0 50 100

SCALE IN FEET

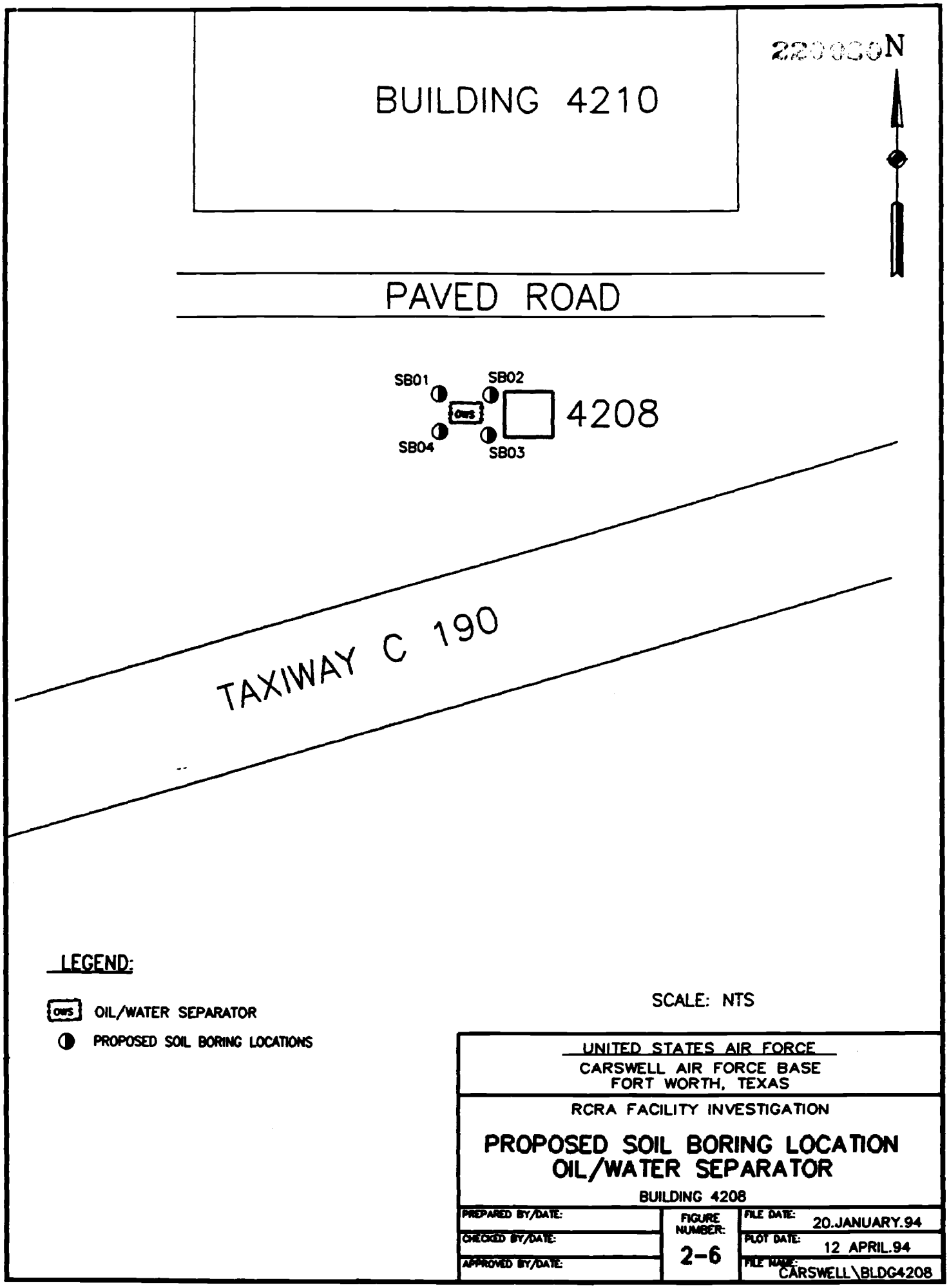
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

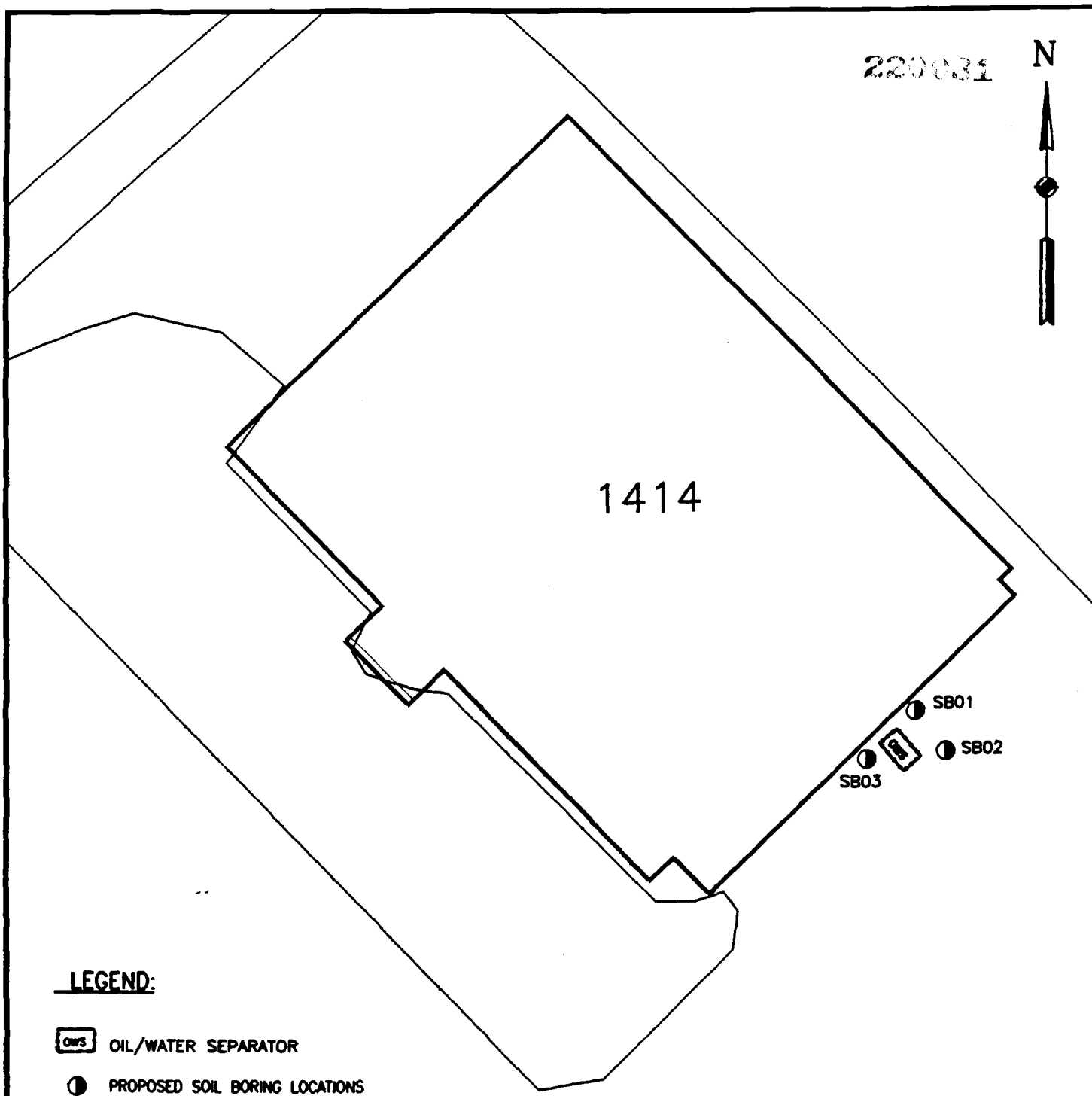
RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1015

PREPARED BY/DATE:	FIGURE NUMBER: 2-5	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 12 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1015.DWG


BUILDING 4210
220030N
PAVED ROAD
SB01
SB02
OWS
4208
SB04
SB03
TAXIWAY C 190
LEGEND:
OWS OIL/WATER SEPARATOR
PROPOSED SOIL BORING LOCATIONS
SCALE: NTS
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS
RCRA FACILITY INVESTIGATION
PROPOSED SOIL BORING LOCATION
OIL/WATER SEPARATOR
BUILDING 4208
PREPARED BY/DATE:
CHECKED BY/DATE:
APPROVED BY/DATE:
FIGURE NUMBER:
2-6
FILE DATE: 20.JANUARY.94
PLOT DATE: 12 APRIL.94
FILE NAME: CARSWELL\BLDG4208



LEGEND:

OWS OIL/WATER SEPARATOR

PROPOSED SOIL BORING LOCATIONS

NOTE: PROPOSED SOIL BORING LOCATION WILL REQUIRE CONCRETE CORING

0 50 100

SCALE IN FEET

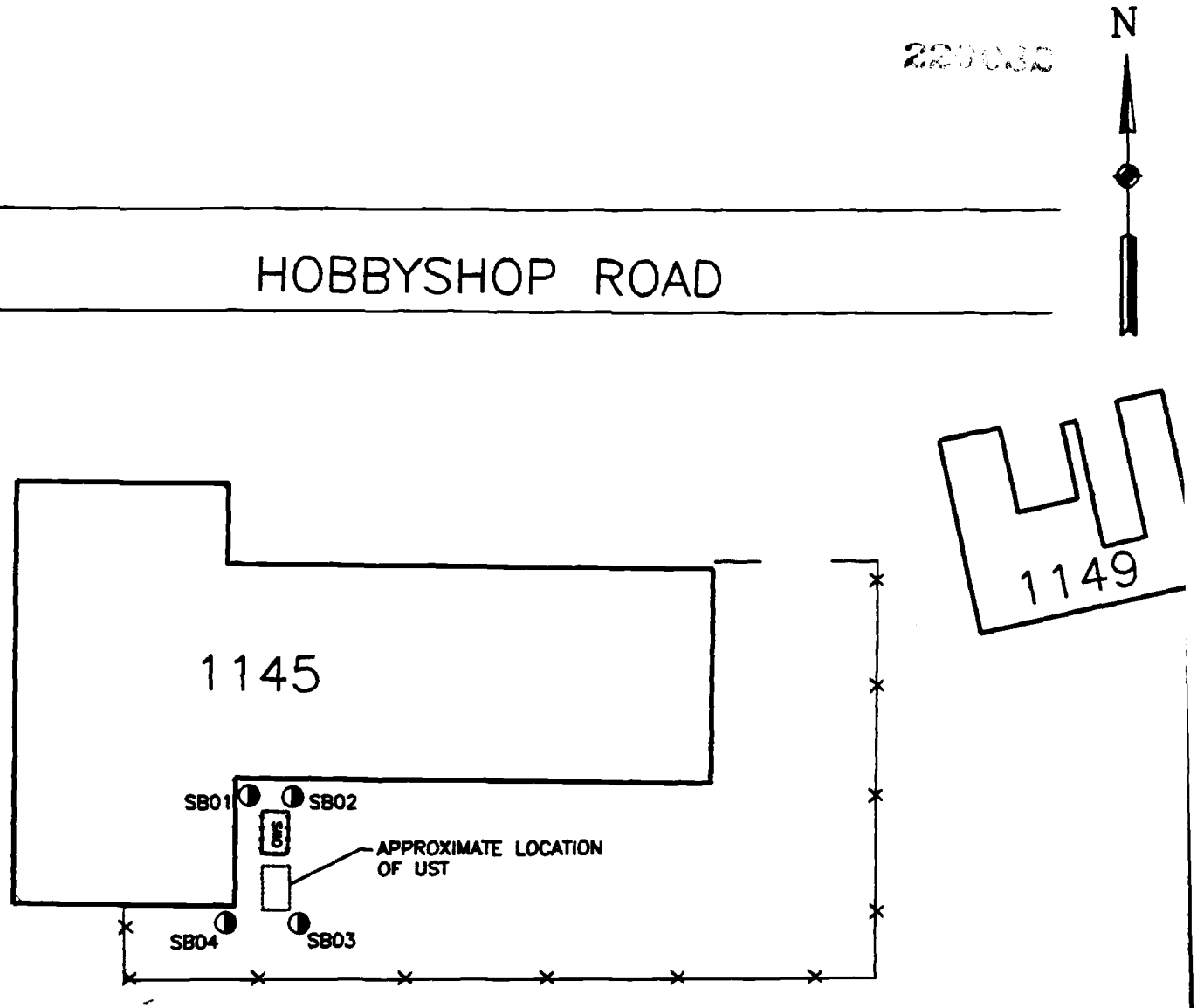
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1414

PREPARED BY/DATE:	FIGURE NUMBER: 2-7	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 12 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1414



LEGEND:

OWS OIL/WATER SEPARATOR

◑ PROPOSED SOIL BORING LOCATIONS

NOTE: PROPOSED SOIL BORING LOCATIONS SB01, SB02, AND SB03 WILL REQUIRE CONCRETE CORING

SCALE: NTS

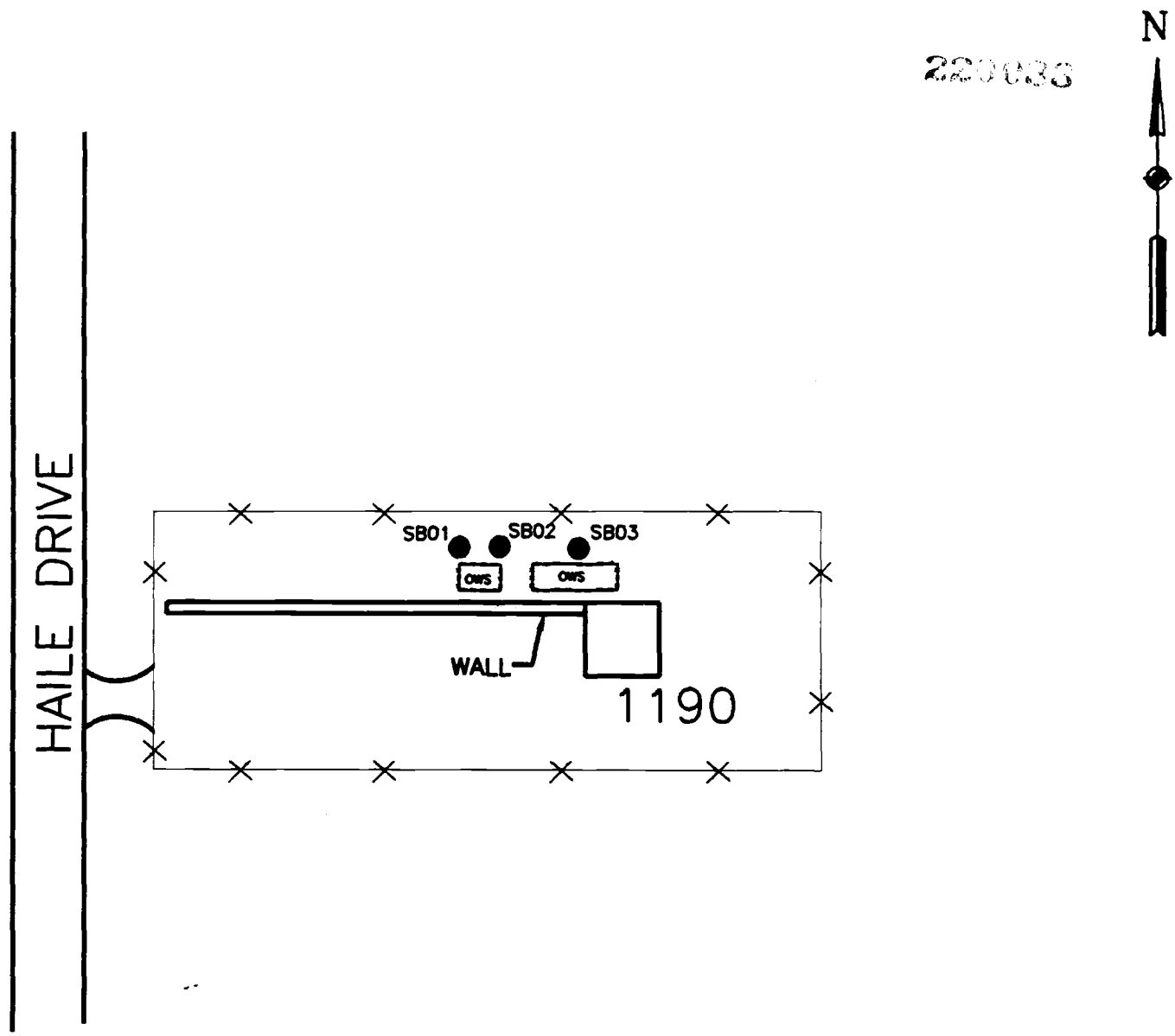
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1145

PREPARED BY/DATE:	FIGURE NUMBER: 2-8	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 14 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1145



LEGEND:

OWS OIL/WATER SEPARATOR

● PROPOSED HAND AUGER BORING LOCATION

SCALE: NTS

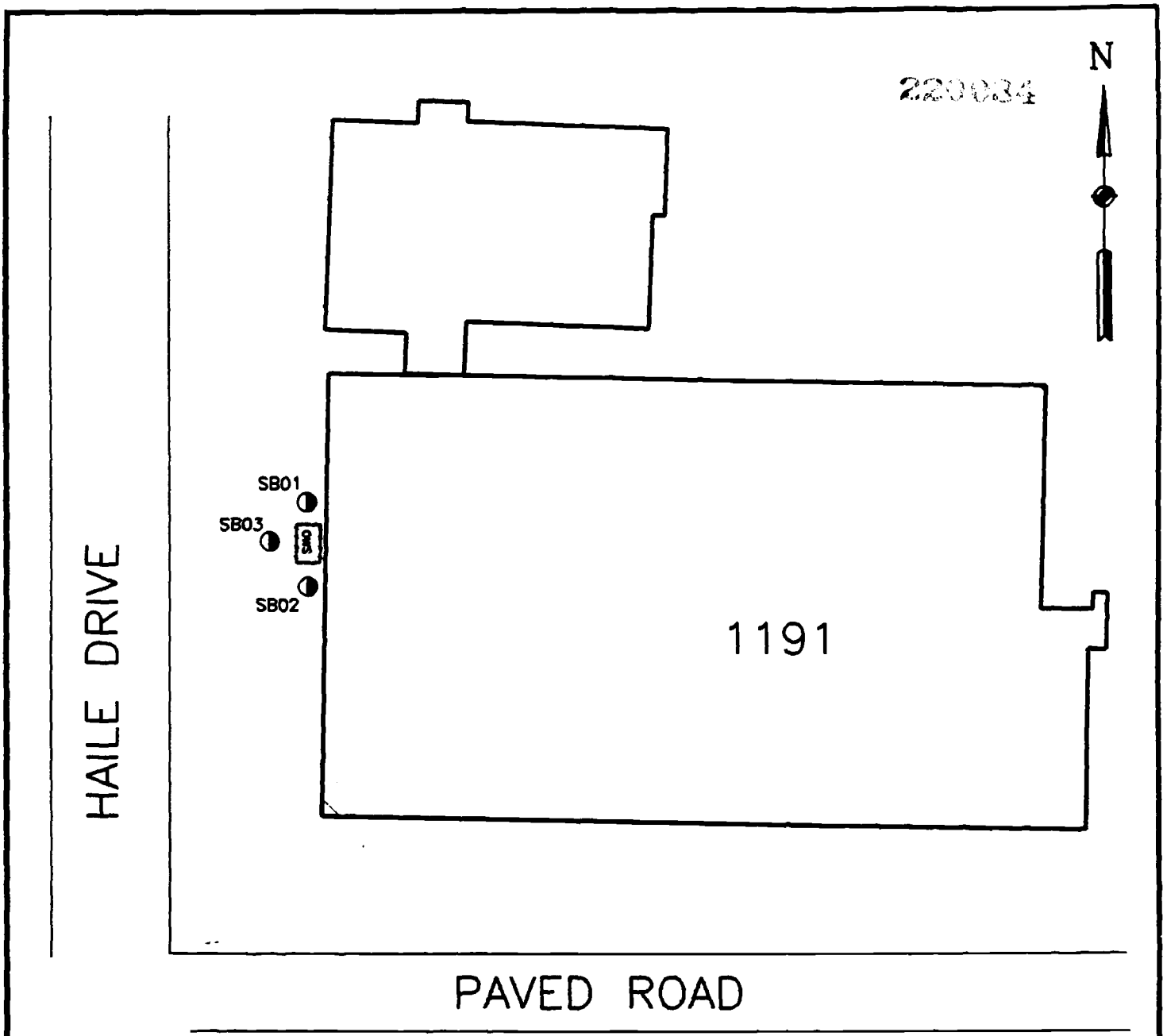
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATORS

BUILDING 1190

PREPARED BY/DATE:	FIGURE NUMBER: 2-9	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 14 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1190



LEGEND:

OWS OIL/WATER SEPARATOR

PROPOSED SOIL BORING LOCATIONS

SCALE: NTS

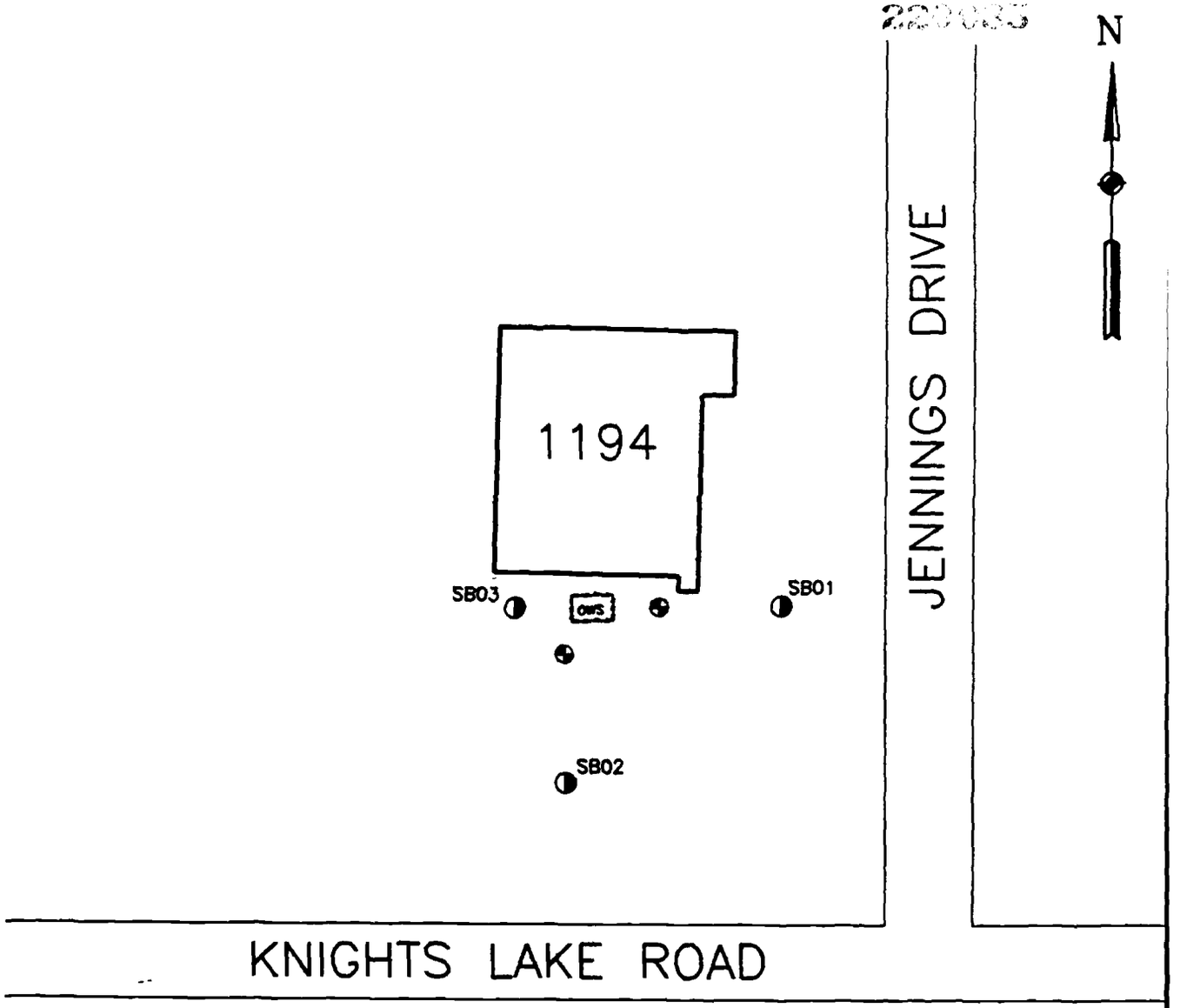
UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1191

PREPARED BY/DATE:	FIGURE NUMBER: 2-10	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 14 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1191



LEGEND:

OWS — OIL/WATER SEPARATOR

◑ PROPOSED SOIL BORING LOCATIONS

◓ EXISTING MONITORING WELL

NOTE: PROPOSED SOIL BORING LOCATION WILL REQUIRE CONCRETE CORING

SCALE: NTS

UNITED STATES AIR FORCE
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

RCRA FACILITY INVESTIGATION

PROPOSED SOIL BORING LOCATION OIL/WATER SEPARATOR

BUILDING 1194

PREPARED BY/DATE:	FIGURE NUMBER: 2-11	FILE DATE: 20.JANUARY.94
CHECKED BY/DATE:		PLOT DATE: 12 APRIL.94
APPROVED BY/DATE:		FILE NAME: CARSWELL\BLDG1194

difficulties. Sites with difficult access requiring concrete coring or hand augering will be investigated by advancing three instead of four soil borings. Table 2-1 presents the number of proposed boring and drilling techniques to be used at each oil/water separator. Those borings which are deleted in areas of difficult access will be relocated and utilized as background samples at locations to be determined in the field. Background locations will be selected at areas representative of background conditions, but which also exhibit the least potential for site-related contamination. Table 2-2 denotes background boring samples grouped with respective oil/water separator sites.

The drilling operations will be monitored by a qualified geologist or geotechnical engineer. The geologist/engineer will log the subsurface conditions encountered in each boring, and record the information on a soil boring log. An example of a soil boring log is shown on Figure 2-12. Soils will be classified using the Unified Soil Classification System (ASTM D 2488-69). Upon completion of the soil sampling activities, the boring will be sealed from the boring termination depth to the ground surface with a cement-bentonite grout. The cement grout will consist of Portland cement (ASTM-C150), with water added in the proportion of no less than five gallons to no more than seven gallons per 94-pound bag of cement. Additionally, three percent, by weight, of bentonite powder will be added to the mixture to reduce shrinkage. The grout will be placed into the boring using a tremie pipe equipped with a side discharge.

Hollow Stem Auger/Split Spoon Sampling

At locations that afford drill rig access, soil borings will be advanced using hollow-stem augering techniques. Hollow-stem augers were selected because they provide a sufficiently stable hole for soil sampling. The augers will have a minimum inside diameter of 6.25 inches to allow collection of soil samples with a split barrel

TABLE 2–1

OIL/WATER SEPARATOR ASSESSMENT
PROPOSED SOIL BORING TECHNIQUE
RCRA FACILITY INVESTIGATION – CARSWELL AIR FORCE BASE, TEXAS

OIL/WATER SEPARATOR	DRILL RIG SOIL BORINGS	CONCRETE CORES	HAND AUGER SOIL BORINGS	TOTAL ANALYTICAL SOIL BORINGS	BACKGROUND * SOIL BORINGS	TOTAL SOIL BORINGS
1. Unnamed Stream (Bldg. 38A)	2**	0	1	3	0	3
2. Truck Re–Fuel Station (Bldg. 1064)	2	0	2	4	0	4
3. Machine Shop (Bldg. 1060)	4	0	0	4	0	4
4. Aircraft Wash Rack (Bldg. 1027)	4	0	0	4	0	4
5. Engine Test Cell (Bldg. 1015)	3	0	0	3	1	4
6. Bomb Assembly (Bldg. 4210)	4	0	0	4	0	4
7. Generator Maintenance (Bldg. 1414)	3	3	0	3	1	4
8. Auto Hobby Shop (Bldg. 1145)	4	3	0	3	1	4
9. Hazardous Waste Storage Area (Bldg. 1190)	0	0	3	3	1	4
10. Vehicle Maintenance Shop (Bldg. 1191)	3	0	0	4	0	4
11. Fuel Truck Repair (Bldg. 1194)	3	3	0	3	1	4
TOTALS	32	9	6	38	5	43

* Background soil boring locations will be determined in the field.

** Soil sampling from monitoring well SD13–MW06 has replaced one soil boring.

PREPARED BY/DATE TDM/14APR94
CHECKED BY/DATE: JJO/14APR94
APPROVED BY/DATE CB/15APR94

TABLE 2-2

BACKGROUND BORING SAMPLE FOR OIL/WATER SEPARATORS
RCRA FACILITY INVESTIGATION - CARSWELL AIR FORCE BASE, TEXAS

BACKGROUND BORING SAMPLE*	ASSOCIATED OIL/WATER SEPARATOR(S)
Background Sample No. 1	Oil/Water Separator Bldg. 38A
Background Sample No. 2	Oil/Water Separator Bldg. 1145 Oil/Water Separator Bldg. 1064 Oil/Water Separator Bldg. 1060
Background Sample No. 3	Oil/Water Separator Bldg. 1027 Oil/Water Separator Bldg. 1015 Oil/Water Separator Bldg. 4210
Background Sample No. 4	Oil/Water Separator Bldg. 1190 Oil/Water Separator Bldg. 1191 Oil/Water Separator Bldg. 1194
Background Sample No. 5	Oil/Water Separator Bldg. 1414

* Boring location and designation to be decided.

PREPARED BY/DATE: TDM / 14 APR 94
CHECKED BY/DATE: [illegible] / 14 APR 94
APPROVED BY/DATE: [illegible] / 15 APR 94

FIGURE 2-12

SOIL TEST BORING RECORD

JOB NO. _____ BORING NO. _____
JOB NAME _____ G.S. ELEV. _____
DATE: _____ HOURS MOVING _____
WEATHER _____ HOURS DRILLING _____
DRILLER _____ PAGE _____ OF _____

DEPTH (FEET)	STRATA DESCRIPTION	#	"N" 1	2	3	4	N	PID	REC	SOIL CLASSIFICATON AND REMARKS	DEPTH (FEET)

BORING TERMINATED: _____
BORING REFUSAL: _____
WATER TOB DEPTH _____
WATER 24 HR.: DEPTH _____
WATER LOSSES _____
CASING: SIZE _____ LENGTH _____

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	TO
HAND CHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO

QA / QC INSTALLED BY: _____ CHECKED BY: _____ DISCREPANCIES: _____

HF

sampler. It is not anticipated that drilling fluids will be required for drilling the soil borings; however, if drilling fluids are utilized, a sample of the fluids will be analyzed to evaluate potential constituents introduced into the boring.

Hand Auger Soil Sample Collection

Hand augers will be used at boring locations (see Table 2-1) which are not accessible to a truck mounted drill rig, and in areas where the proximity of underground and overhead utilities and above ground structures preclude the use of a drill rig.

The soil sampling procedure using a hand auger will involve the following steps:

1. Discard the initial six inches of soil from the hand auger; as with the top brass ring, this typically represented soil fall-in.

2. Remove the second hand auger bucket and use immediately to collect a sample for volatile organics. Soils removed for volatile organic analysis will be immediately placed into two 2-ounce glass jars and held on ice until boring completion.

3. Empty the third and fourth buckets into decontaminated stainless steel bowls, and cover with aluminum foil and hold until sample determination has been made. Soils will be removed from the third and fourth buckets for headspace analysis.

Prior to advancing soil borings, the depth of each oil/water separator will be measured. The hand auger soil borings will be terminated either at the saturated zone or at a depth 2 feet below the oil/water separator, which ever is shallower, due to the

difficulty involved with advancing soil borings with hand augers. The same sample determination strategy used to determine the depth of the sample for analysis by the split-spoon borings will also be followed for the hand auger borings.

2.1.3 Surveying

Soil borings associated with the oil/water separator assessment will be located using compass bearings and taped measurements from buildings and other landmarks.

2.1.4 Equipment Decontamination

Refer to Section 2.1.8 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

2.1.5 Waste Handling

Refer to Section 2.1.9 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 1993, prepared by Law Environmental.

2.2 ENVIRONMENTAL SAMPLING

The field sampling activities for this addendum only include the collection of soil samples. The collection methods including sample handling, sample custody, QC samples, and sample analysis are presented in the following sections.

2.2.1 Procedures for Collection of Soil Samples

This section presents the planned program for collection of soil samples for chemical analysis. The types and numbers of field quality control samples are presented in Table 1-1 by matrix and parameter.

Prior to sampling, field instruments will be calibrated, files containing sample information will be processed and labels will be prepared. Sample bottles will be sorted for each sample location according to analyses. Conditions and sampling information will be recorded in the field sampling books and used to assess sampling procedures in relation to the sample data. The field team leader will brief the sampling team on safety, decontamination stations, and any other sampling protocols necessary. Each sampling team member will wear the appropriate level of safety gear as specified for each site in the addendum to the Health and Safety Plan.

Two soil samples will be collected from each soil boring using the following procedures. The hollow-stem auger will encase an 24-inch long, carbon steel split barrel sampler which will, in turn, encase four 6-inch California brass rings. After the soil sample has been retrieved from the boring, the split barrel sampler will be placed on a sheet of aluminum foil. Each end of the split barrel sampler will be opened by unscrewing the end caps. A portable Photoionization Detector (PID) will be used to field screen the soil at the end of each brass ring. After the soil samples have been field screened, the brass rings will be sealed with a Teflon patch and plastic cap encasing the sample in the brass ring. Based on the field screening results, the sample from the interval with the highest PID reading will be retained for laboratory analysis along with the soil sample from the boring termination. It is predicted that the soil sample from the boring termination will indicate whether the oil/water separators have leaked. The boring termination will be just below the depth where the bottom of the

oil/water separator exists. Any leakage from the oil/water separator will run downward and sampling the boring termination will facilitate the contamination assessment.

For the soil samples retained for laboratory analysis, the middle 6-inch brass ring sample will be sent to the laboratory for volatile organic compound analysis. In the event that soil recoveries are low, the selection of the brass ring used for volatile analysis will be made on the basis of which brass ring contains 100% recovery. If none of the brass rings have 100% recovery, the sample with the highest recovery will be capped and labelled indicating the percent recovery. Soil from the remaining two brass rings will be removed and placed into a stainless-steel mixing bowl. The soil sample will be thoroughly mixed with a stainless-steel spoon and placed into the appropriate laboratory sample containers. All sampling equipment will be decontaminated following the procedures in Section 2.1.8 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.2.2 Sample Handling

Refer to Section 2.2.2 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.2.3 Sample Custody

Refer to Section 2.2.3 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.2.4 QC Samples

Refer to Section 2.2.4 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.2.5 Sample Analysis Summary

Table 1-1 summarizes the environmental samples and the proposed QC samples to be analyzed by parameter for the soil sampling described in this addendum.

2.3 FIELD MEASUREMENTS

Refer to Section 2.3 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.4 FIELD QA/QC PROGRAM

Refer to Section 2.4 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.5 RECORD KEEPING

Refer to Section 2.5 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

2.6 SITE MANAGEMENT

Refer to Section 2.6 of the Installation Restoration Program (IRP) RCRA Facility Investigation Final Sampling and Analysis Plan for Carswell AFB, Fort Worth, Texas, dated December 30, 1993, prepared by Law Environmental.

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE

FINAL PAGE

ADMINISTRATIVE RECORD

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